

# Access Gaps Consultancy

## Project Description and Expected Outcomes



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- Introduction
- Scope of study, methodology and expected outcomes
- Illustrative country examples
- Information requirements for success
- Project timelines

# Study Objectives and contract

Approximately one year consultancy project to:

- Assess on a country-wide level the extent of communication coverage and the access levels achieved
- Engage with the industry and other stakeholders / information providers to identify the gaps in service provision
- Support implementation of initial USF network expansion projects, grouping gap area and special projects (e.g., schools connectivity) into optimal lots for purposes of tendering to service providers
- Provide long-term strategy and update USF's Operating Manual

# Intelecon Research & Consultancy Ltd.

Boutique ICT strategy consulting firm recognised for global leadership in universal access and funding with strong **experience in emerging markets** and developing countries

Incorporated 1998 in Vancouver, Canada, now also present in Germany

Key advisory services:

- Universal Access/ Service & broadband strategies
- ICT applications, m-money & Base of the Pyramid businesses
- ICT market analysis, policy & regulation

Intelecon focuses strongly on **commercial viability** and thus **sustainability** of any development project, policy or regulation

Worked on USF strategy & implementations in **over 16 countries**:

- Uganda, Nigeria, Tanzania, Burkina Faso, Mozambique, Malawi, Botswana
- Saudi Arabia, Russia, Mongolia, Peru, and
- Philippines, India, Pakistan, Vanuatu
- **Publications:**
  - Universal Access report for GSMA
  - Best practice USF online toolkit for the World Bank
  - World Bank / IFC publications on mobile money & mobile apps in rural development

# The consultancy Team



Sonja Oestmann

- Managing Director of Intelcon – Market, Demand & USF establishment Specialist
- Co-lead Market Analysis, lead all demand study activities and USF Manual Revisions



Andrew Dymond

- Team leader - Universal Access, Subsidy Modelling & Project Planning Specialist
- Responsible for Access Gap Subsidy Model & Implementation Support



Fabrice Lartigou

- GIS Analysis and Web Portal Design Expert
- Undertake the GIS Gap analysis, create Portal, provide training in Portal management



Arthur Muhangi

- Independent Consultant, Uganda – Economist with USF Management Experience
- Advise on procurement rules and project planning and USF Manual Revisions



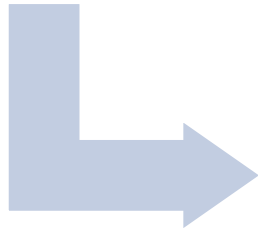
David Mulongo

- Kenyan Telecom Engineer with system design experience
- Liaise with operators, advise on costing and support project design specifications

# Overall scope of Work – 12 months

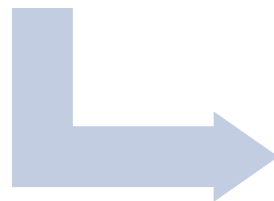
## Access Gap Study and USF Portal

- Stakeholder Consultation
- ICT Service and Gap Analysis – Voice, data, Broadcasting & Post/Courier
- Feasibility & Subsidy Model
- GIS-driven Online and updatable Portal
- Identify USF Subsidy Tender Lot Scenarios



## Program Development and Subsidy Competition Support

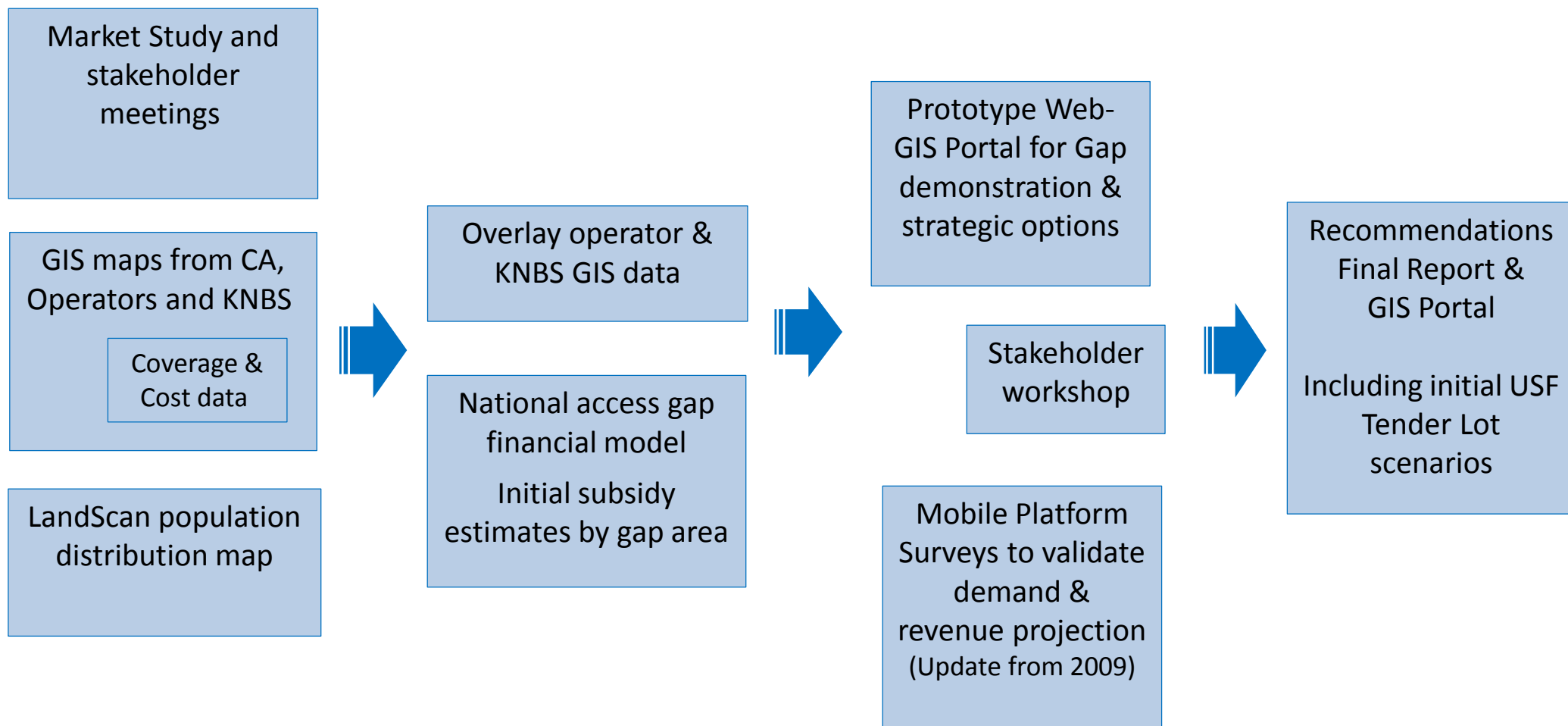
- Identify and Appraise Set of First Priority Investments
- Prepare Bidding Lot Specifications
- Assist on all Tender Milestones
- Assist with Subsidy awards and contracting



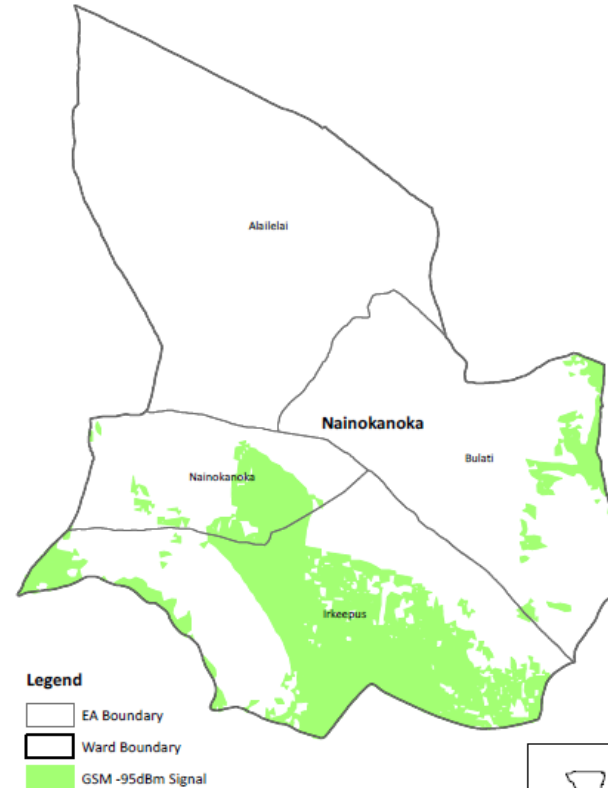
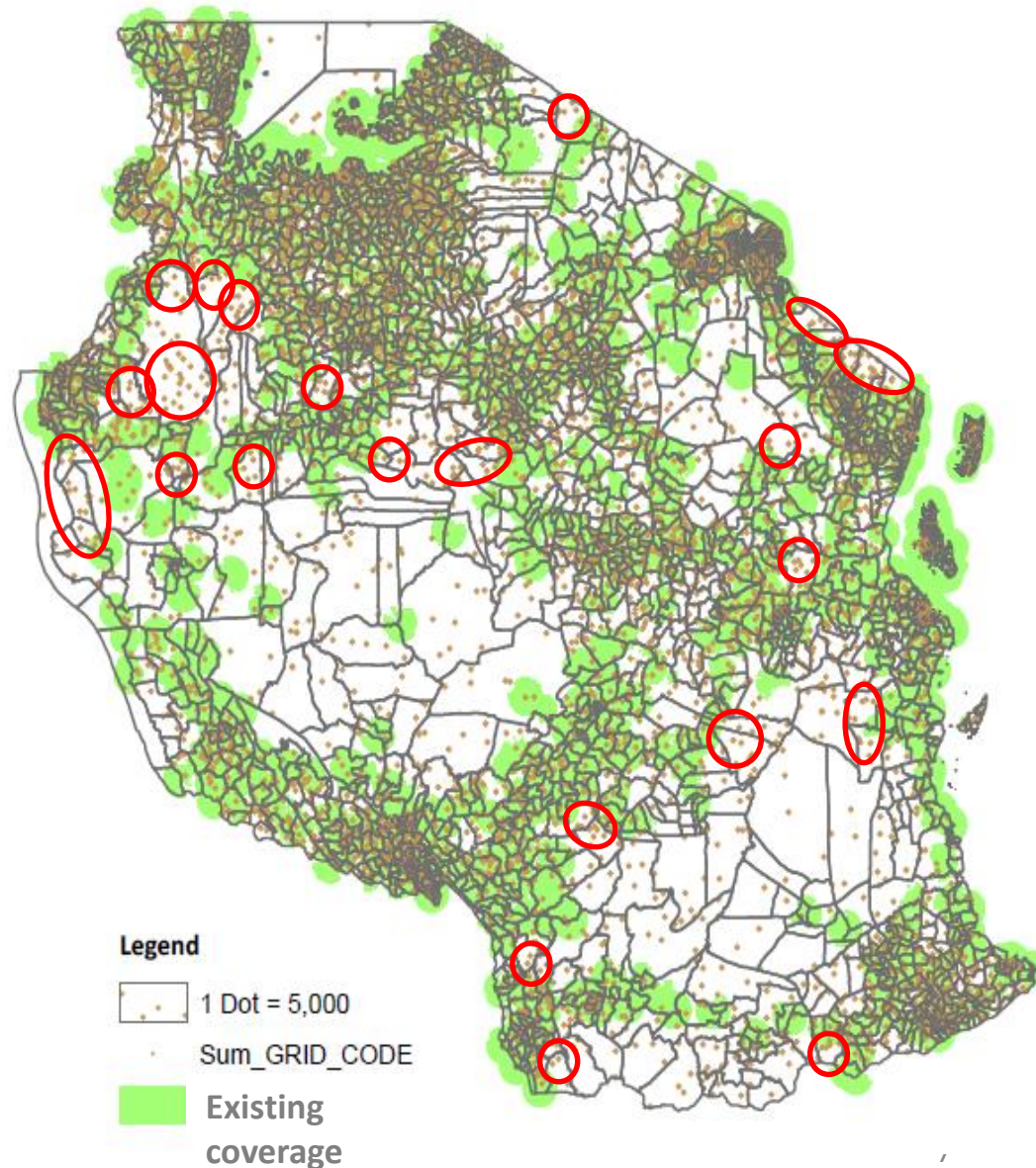
## USF Documentation & Operating Manual Update

- Provide USF Competition Templates
- Provide 5-10 Year USF Implementation Strategy
- Provide Monitoring Design
- Review and revise Operating Manual

# Methodology – Phase 1 Access Gap Definition



# Typical output of Access Gap study: Tanzania





# Stakeholder meetings – consultation & data collection

## Critical viewpoints, information and data will be requested for:

- GIS based service coverage and infrastructure components
- Network Capex and Opex site and service costing
- Rural demand and revenue perspectives
- Potential access and connectivity options and strategies

## Already completed & in process

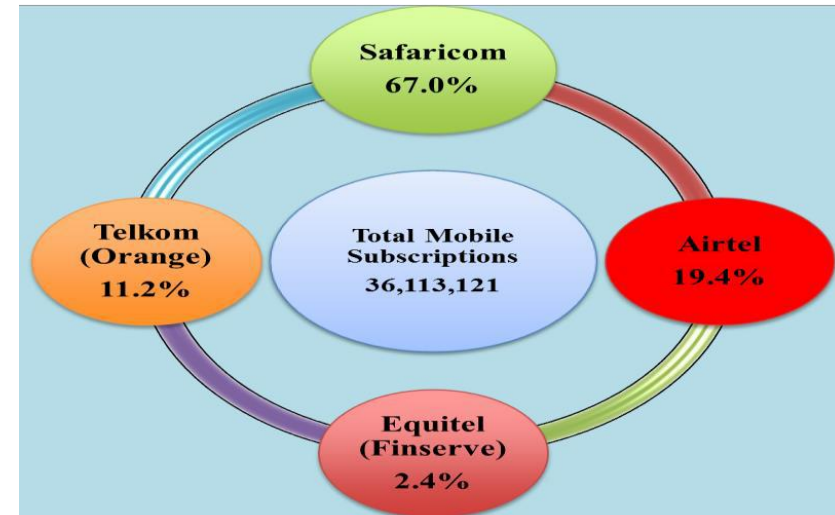
- Safaricom
- Airtel
- Orange Telkom Kenya
- Jamii Telecom Limited
- Wananchi
- Liquid Telecom
- ICT Authority
- Ministry of ICT
- Ministry of Education

## Next week

- KNBS
- PCK
- Ministry of Devolution (re Huduma)
- AccessKenya Limited
- iWay Africa
- Finserve
- Signet
- PANG
- Others, as agreed with CA

# The telecom market status

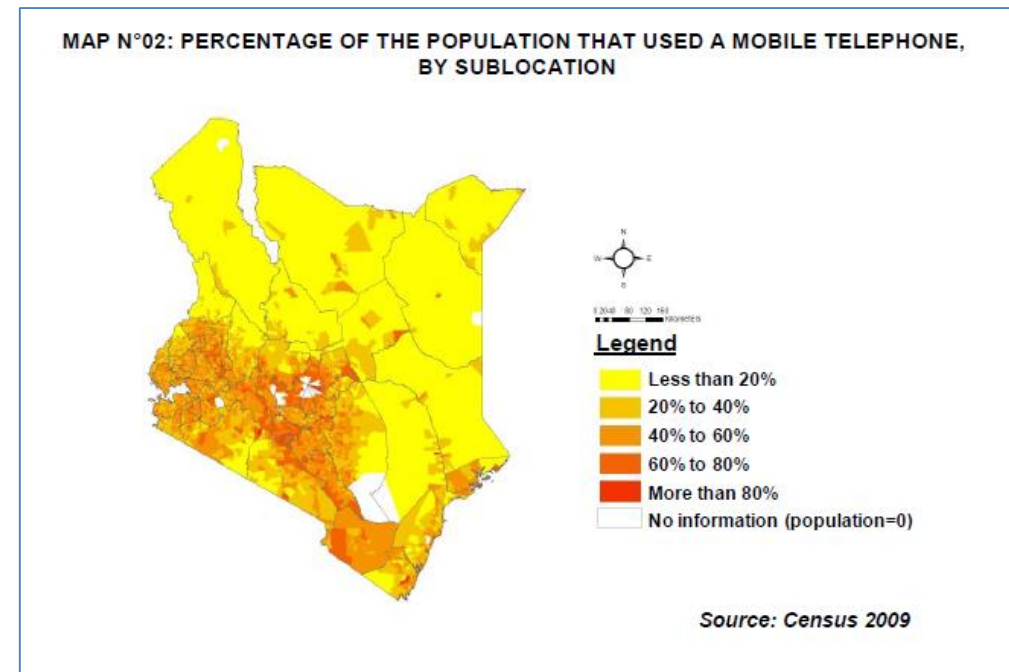
- Mobile growth and usage (85 min/month) has remained vibrant and increased competition is noted, though Safaricom retains the strongest position
- Traditional fixed services in rapid decline with turn-down of Telkom's CDMA and ADSL
- Fixed broadband now dominated by fibre as Telkom replaces ADSL
  - Fibre services provided by several operators
- But Internet / data subscriptions dominated by the mobile operators
  - USF could expect mobile and wireless to offer the most useful gap solution, but
  - Transmission subsidy options will also be considered



Internet/Data Subscriptions	Jun 15
Total Internet Subscriptions	19,924,285
Mobile Data Subscriptions	19,809,709
Terrestrial Wireless Data Subscriptions	17,721
Satellite Data Subscriptions	635
Fixed DSL Data Subscriptions	2,597
Fixed Fibre Optic Data Subscriptions	93,598
Fixed Cable Modem Subscriptions	25
<b>Total Internet Users</b>	<b>29,672,419</b>

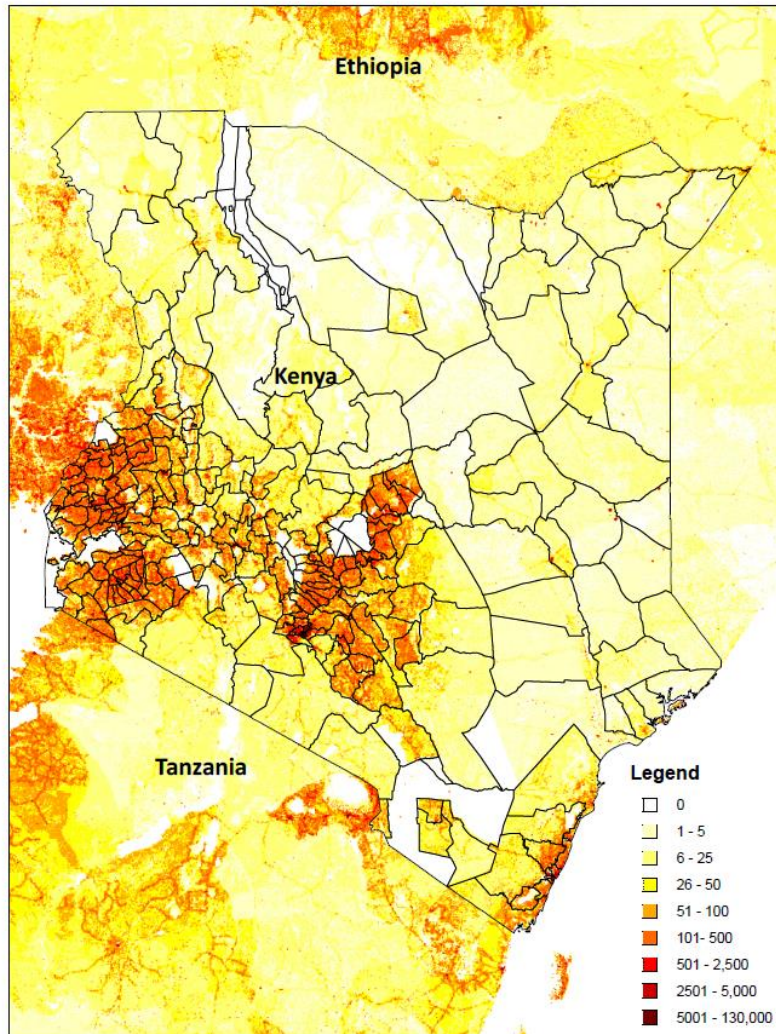
# Understanding the current voice gap

- How much has voice coverage progressed beyond the 2009 Access Gap Study?
  - 1,119 sub-locations without access to mobile
  - This study will show the answer
- How much have mobile operators expanded commercially?
  - 90%+ population coverage?
  - GIS mapping will assess the situation
  - Useable service for a common signal level to be mapped

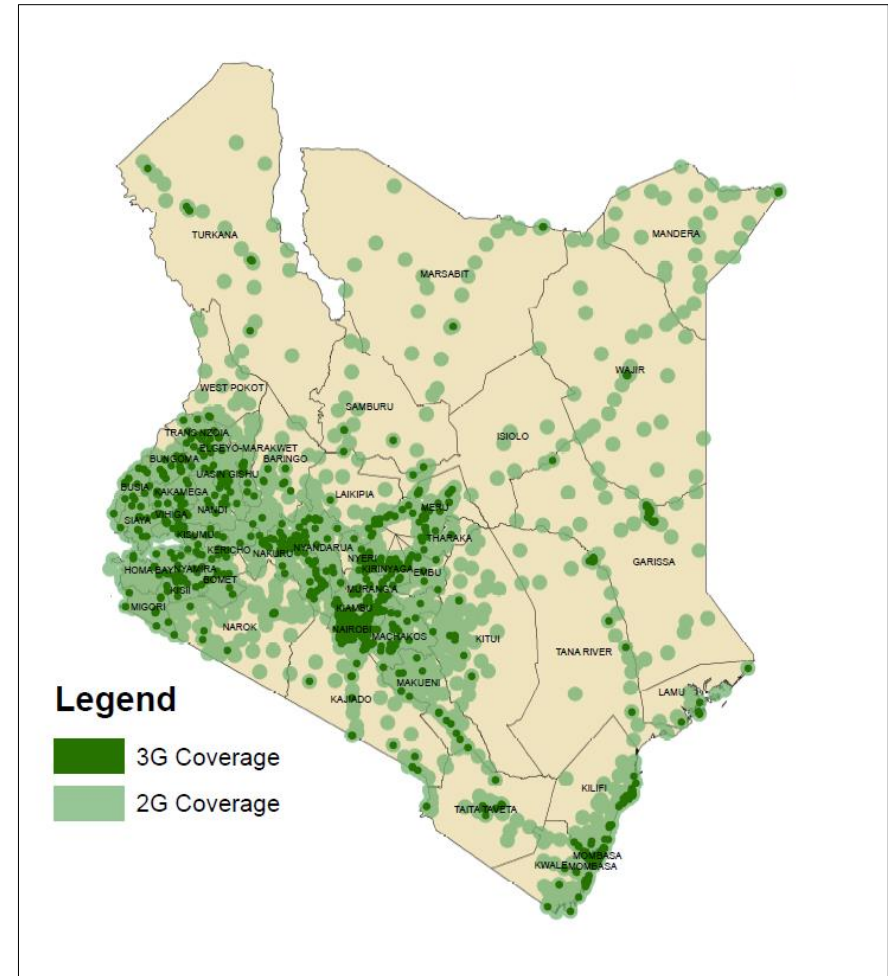


# Kenya's ICT Gap situation today

- Challenging demography



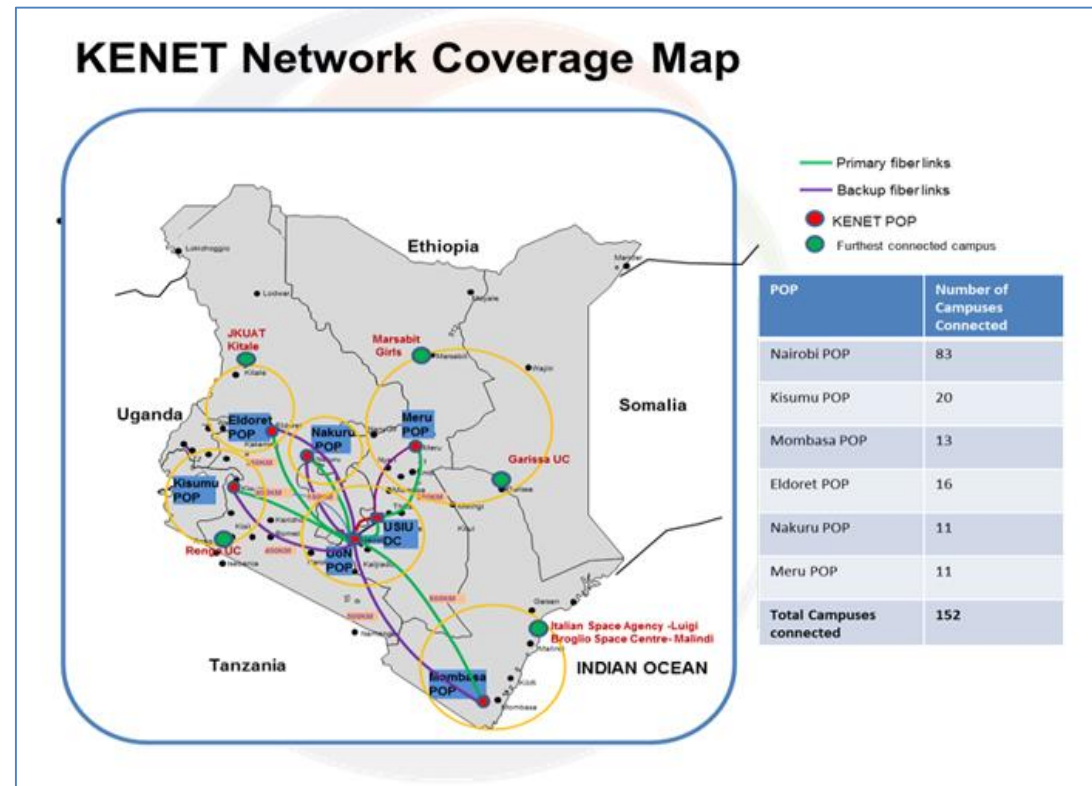
- Current mobile coverage reflects the challenges









# Understanding re Internet – questions to address

- The fibre services have a very limited last mile reach into rural areas
- Which mobile sites now have 3G?
- What potential role for 900 MHz spectrum and LTE?
- Role of collaboration with ICT Authority with the role of TEAMS
- Identify most viable public service delivery vehicles for gap areas (e.g., Huduma)
- USF should consider the school connectivity gap as a high priority
  - What would be the most viable and realistic approach?
  - KENET offers a potentially strong support platform




# Key reasons for USF school connectivity consideration

-  ICT capacity in schools – upcoming generation – has the biggest potential impact on country's economy
-  For Kenya's digital aspirations to thrive, school connectivity & integrating ICT into education cannot wait any longer – and the gap transcends geography
-  Demand stimulation among future users of ICT - broadband market still expanding
-  Internet ready – the ecosystem is developing with electrification, computer studies curriculum, teacher ICT integration training & the laptop initiative

# School connectivity today

## The public system:

- 22,000 primary schools
    - 18,000 electrified
    - Many communities preparing lab facilities
    - Some teachers trained in ICT integration in all schools
    - Laptop initiative upcoming
  - 7,000 secondary schools
    - 90% electrified
    - 3-4,000 have computers
    - Computer studies program examinable at Form 4
    - Many ICT trained teachers
- 

## Situation with connectivity

- **Very few schools connected**
- MoEST experimentation with access provision via 3G has stalled
- KENET reach-out through Schools Connectivity Program supported by one operator for Nairobi County
- Other operators have small sized CSR initiatives
- KENET would be ideal network & service support organisation, but last mile connectivity, opex costs and international access need to be supported
- **The environment for USF to support progressive connection of schools is in place**, while MoICT / ICT Authority role through TEAMs partnership could also be strategic

# School connectivity initiatives elsewhere

Country	# of schools	Details
Uganda	1,000+ (All Gov't Sec. Schools)	The USF (RCDF) Program committed 50% of its investments to provision of computer labs, e-Learning resources (Virtual Lab software for science subjects) & connectivity from 2007 to present
Argentina	4,424	USF competitive bidding: Installation & 5 years 3MB Internet services Many technologies used: ADSL, WiFi, WiMax, FO cable, VSAT
Uruguay	One Laptop per child	First country in the world to provide a laptop for every primary school student
Chile	8,800	Subsidized access to broadband @ 10Mbps 7,000 by Telefonica (fixed incumbent) negotiated agreement 1,800 by competitive bidding USF
South Africa	NA	In 2014 regulator ICASA amended frequency licence obligations, and will identify 300 schools for each operator to connect per year Internet access at discounted rate, subsidized by USF By 2016 50% of schools should have 10MB
Nigeria	766	USPF to connect about 2,000 more public schools by 2017



# The Proposed portal

The GIS data layers of the portal will include (*subject to data availability*):

- Administrative boundaries (e.g., county, constituency, ward, locality, sub-locality)
- Population numbers to the lowest administrative level possible
- Village centre positions
- Indicators of income or expenditure (probably to the ward level)
- Physical infrastructure (roads and electrification routes)
- Post offices & Huduma Centres
- Social infrastructure (Gov't offices, schools, colleges, hospitals & health centres)
- Economic infrastructure – businesses and market centres
- Fibre and other transmission routes and end points
- Signal coverage to specific levels – 2G/3G/4G/LTE and other
- Broadcast stations and coverage



#### The Authority

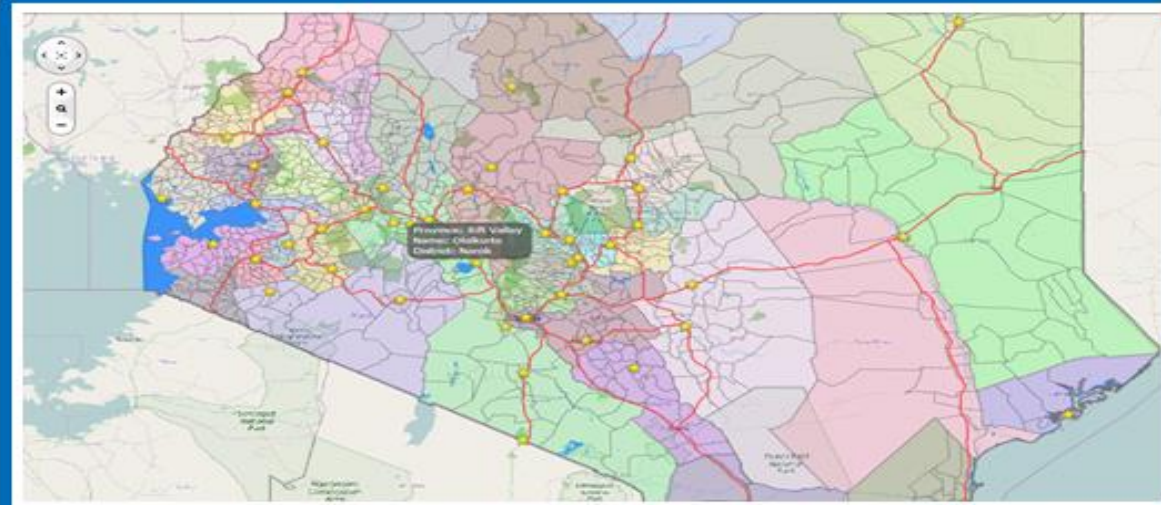
- What we do
- Vision & Mission
- Organization & Structure
- Board of Directors
- Strategic Plan
- Our Service Charter
- CSR
- CA Information Center
- Affiliated International bodies
- Career Opportunities

#### Industry

- Broadcasting
- Telecommunication
- Information Security
- Frequency Spectrum
- Postal and Courier
- Type Approval
- Numbering

#### Consumers

- Overview
- Consumer Education Outreach Program
- Mobile and Fixed Line Services
- Quality of Service
- How to make a Complaint
- Internet Services
- Kikao Kikuu



1

3

2

Accessible from

- the Authority's website
- The DYNMAP/GEO web portal
- A dedicated URL

# Portal and Access Gap Model capabilities

Display service and access gaps at ward, location and sub-location level

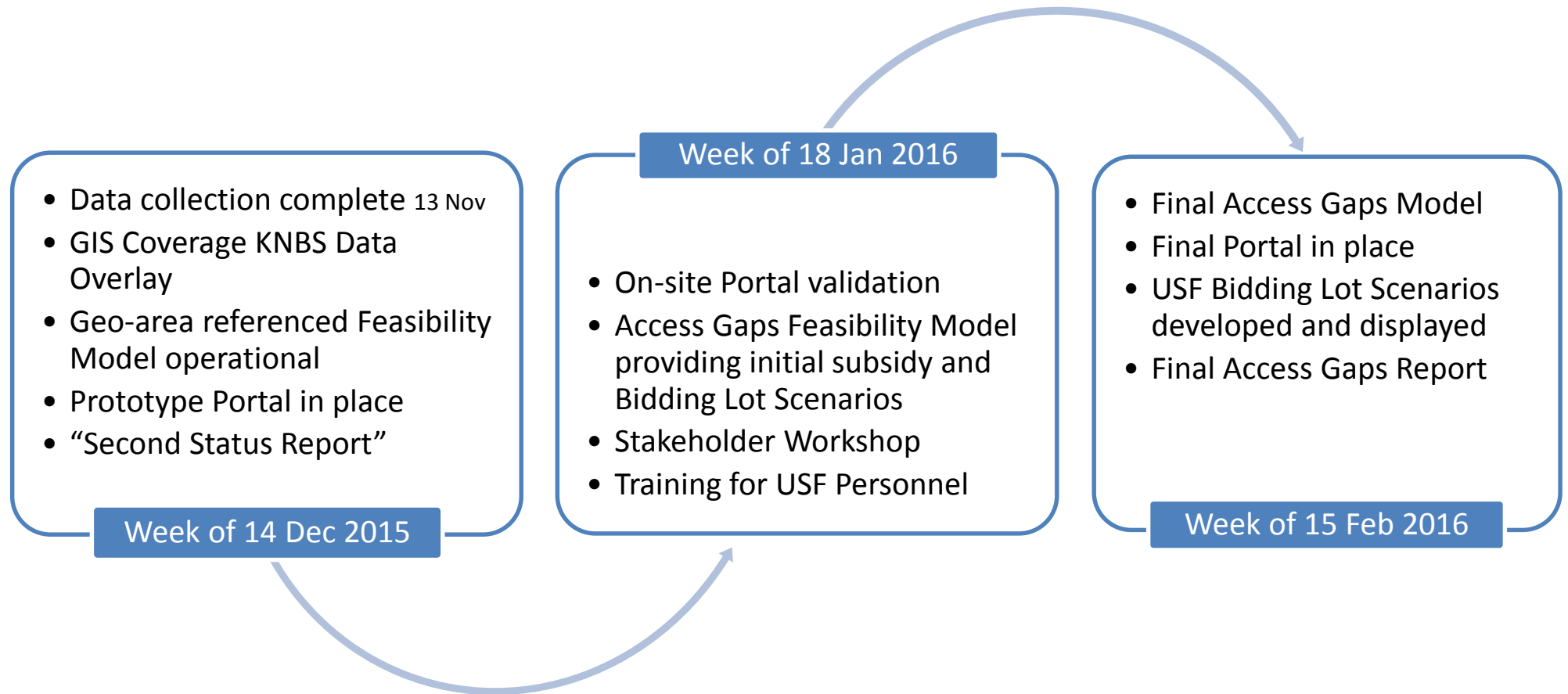


Inform and enable Excel geo-area based feasibility and subsidy model creation



Enable USF project bidding opportunities, lot boundaries, subsidy estimates & project specifications to be developed and displayed

# Phase 1 Schedule



## Phase 1 into Phase 2 →

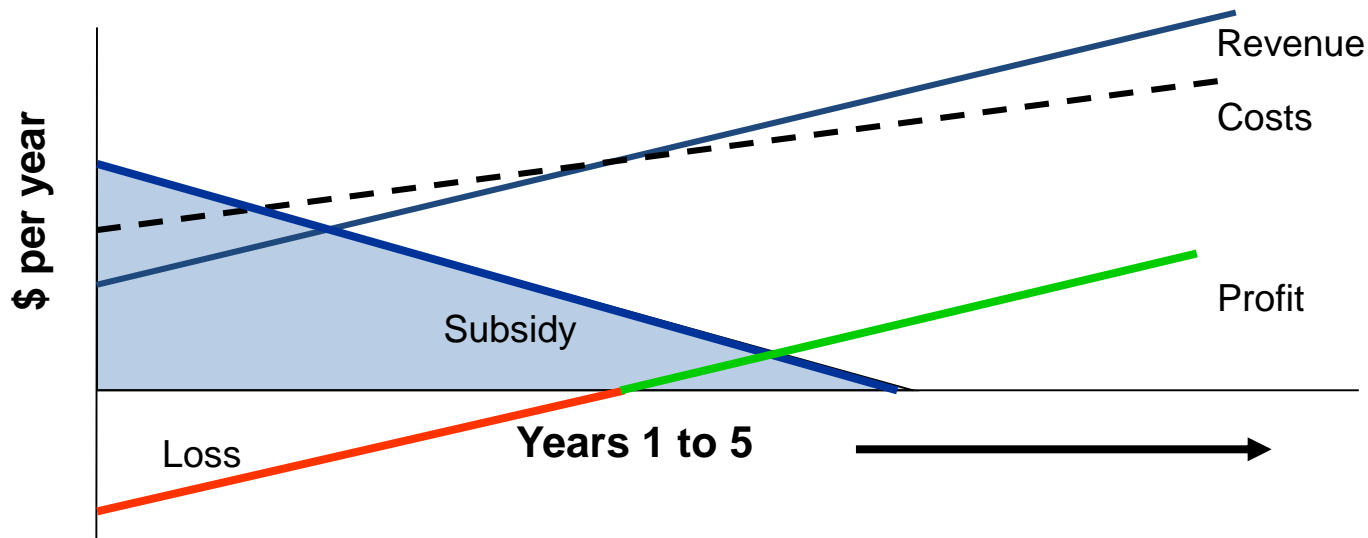
### How USF's competitions will be implemented

- USF's model will project the 5 year revenues & costs, and estimates the “financial gap” (Max. allowable subsidy) in specific gap bidding lots
- Bidders make their own estimate - *at or below the max. allowable subsidy*
- Subsidies awarded to the *lowest technically qualified bidder in each lot* paid over a limited period (e.g. the first 1-3 years)
- The operator accepts a 5 year obligation to provide service
- **Typical subsidies offered will likely be in the range of 25-75% of Capex**
- Broadband may have *less certain finances* than voice – tends to increase subsidies as % of Capex
  - Schools could also require a transitional period of ongoing financial support

# Subsidy estimation methodology and expectations

*“Smart subsidy” = the amount of subsidy required by an operator to bring loss-making services to an acceptable rate of return over the long term*

- Services in a gap area – voice & data services, broadband access
- Once-only financial agreement with operators
- Business sustainable in the medium/ long term



# The geo-referenced subsidy estimation Model

## Demand Side

- Unserved Populations
- Affordability & Revenues based on KNBS and demand data
- Penetration & ARPUs

## Cost side

- Distances from nearest access points and existing coverage
- Backbone & access system unit costs
- Terrain factors to reflect levels of difficulty

Analysis undertaken to the most feasible and practical project boundary level – E.g., **Ward**, **location** or **sub-location**

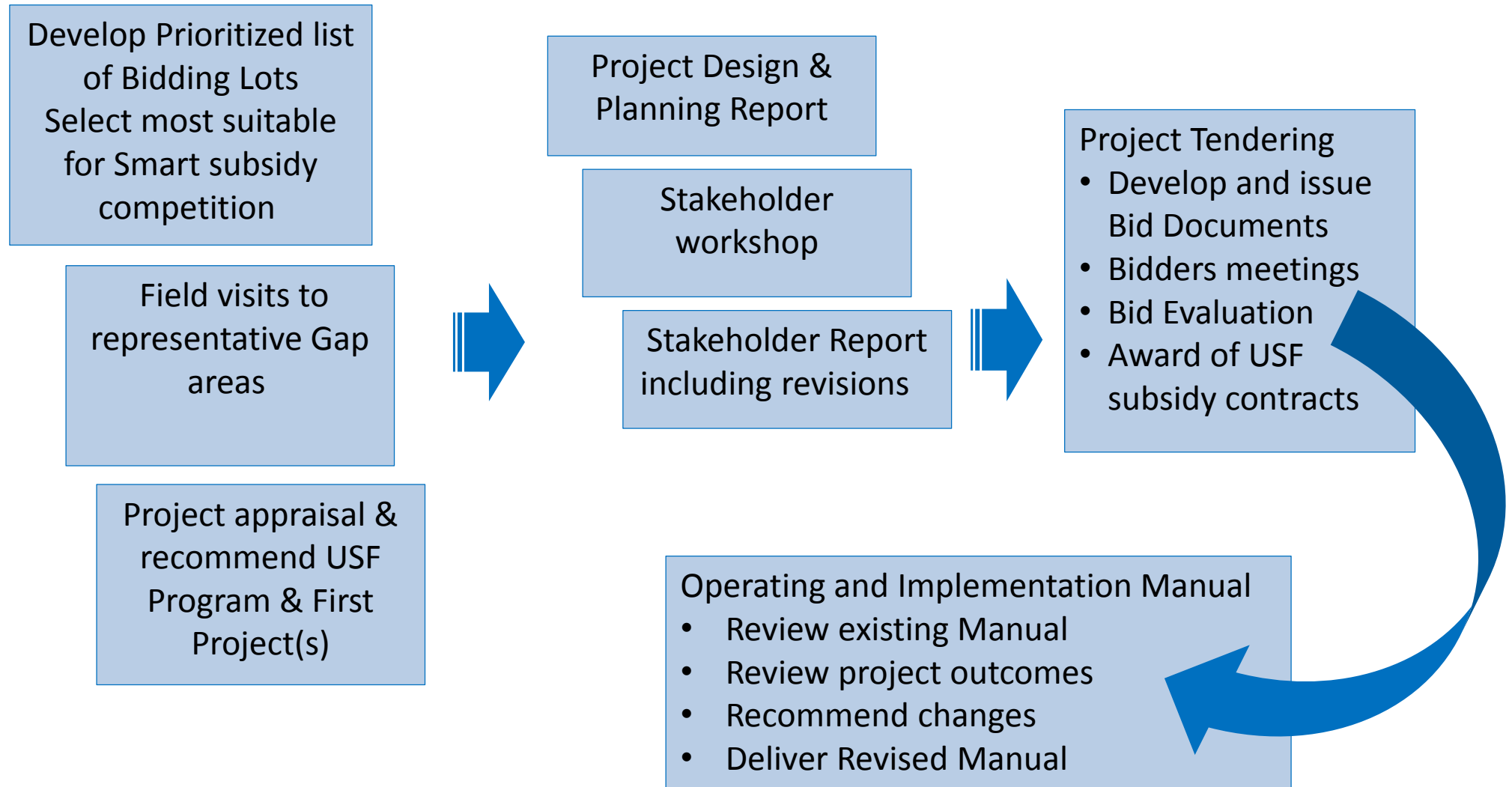
## Financial analysis

- Commercial viability or loss
- Financial gap & subsidy requirement to achieve viability
- Cost/benefit indicators per area

## Strategic analysis

- Total subsidy costs
- Prioritize “smart subsidy” areas
- Key targets within clusters e.g., schools, clinics, POs, villages, etc.
- Develop program & project(s)
- Recommended first project(s)

# Methodology - Phase 2: Project Management & Support

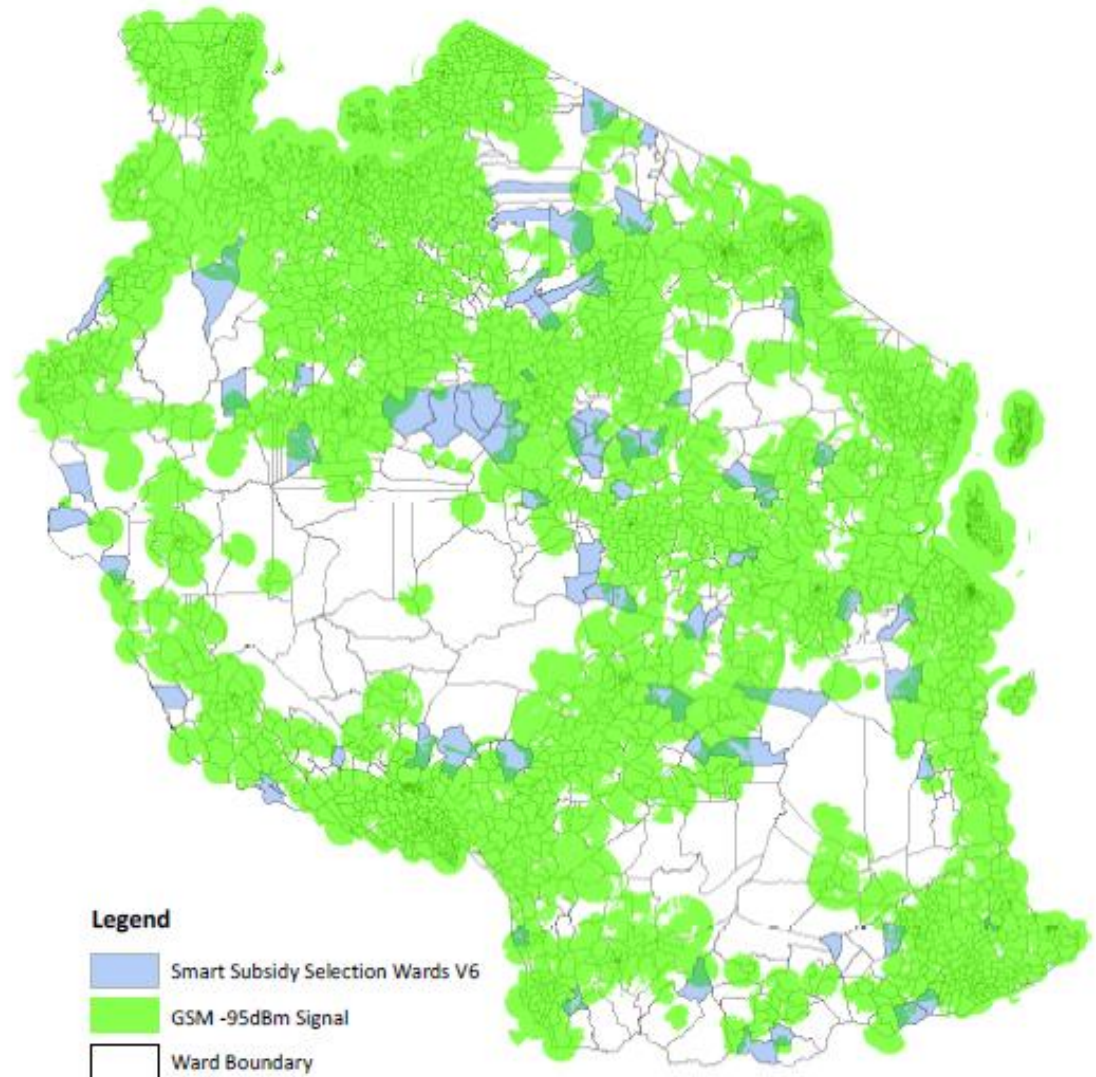




# The Tanzania example - Ward level Tendering Lots

From similar gap study on 2G voice access, 67 wards identified to be the ideal for subsidy competition, each having:

- At least 50% population uncovered
- Up to 6,000 uncovered population per new cell needed
- Contiguous with existing coverage
- At least 25% viable investment appraisal
  - up to 75% Capex subsidy
- Estimated total subsidy US\$ 8.6 million (out of \$20 million needed investment)
  - Average 43% Capex subsidy



# Results of the Tanzania Ward-level Competitions

High percentage of Gap Wards awarded					
	Total Awarded	Vodacom	MIC / Tigo	TTCL	Airtel
Phase 1 – Dec 2012	52	1	19	20	12
Phase 1A – July 2013	77	36	4	33	4
Phase 1B - September 2013	86	37	33	16	8
Phase 2A – February 2015	116	56	19	41	-

- Typically 65-70% of budget was distributed by each competition
- Over US\$ 20 million in total awards
- Different operator strategies, depending on existing coverage and plans
- Vodacom & Tigo became more aggressive competitors following sale of their passive infrastructure, reducing Capex requirements

# RCDF's program in Uganda more diverse

## Main features

- Between 2003-7, focused on *ensuring access* to ICT services for underserved areas.
- From 2007, focus shifted to *ensuring ICT usage*
  - Schools, Health Sector, Content and Applications
- Has disbursed US\$ 40+ million (90% of operator levies)

## Outputs

- 100% voice coverage at sub county level
- 100% data POP coverage for district centre towns
- Teaching of computer studies in government secondary schools enabled
- Basic ICT equipment in all district government hospitals

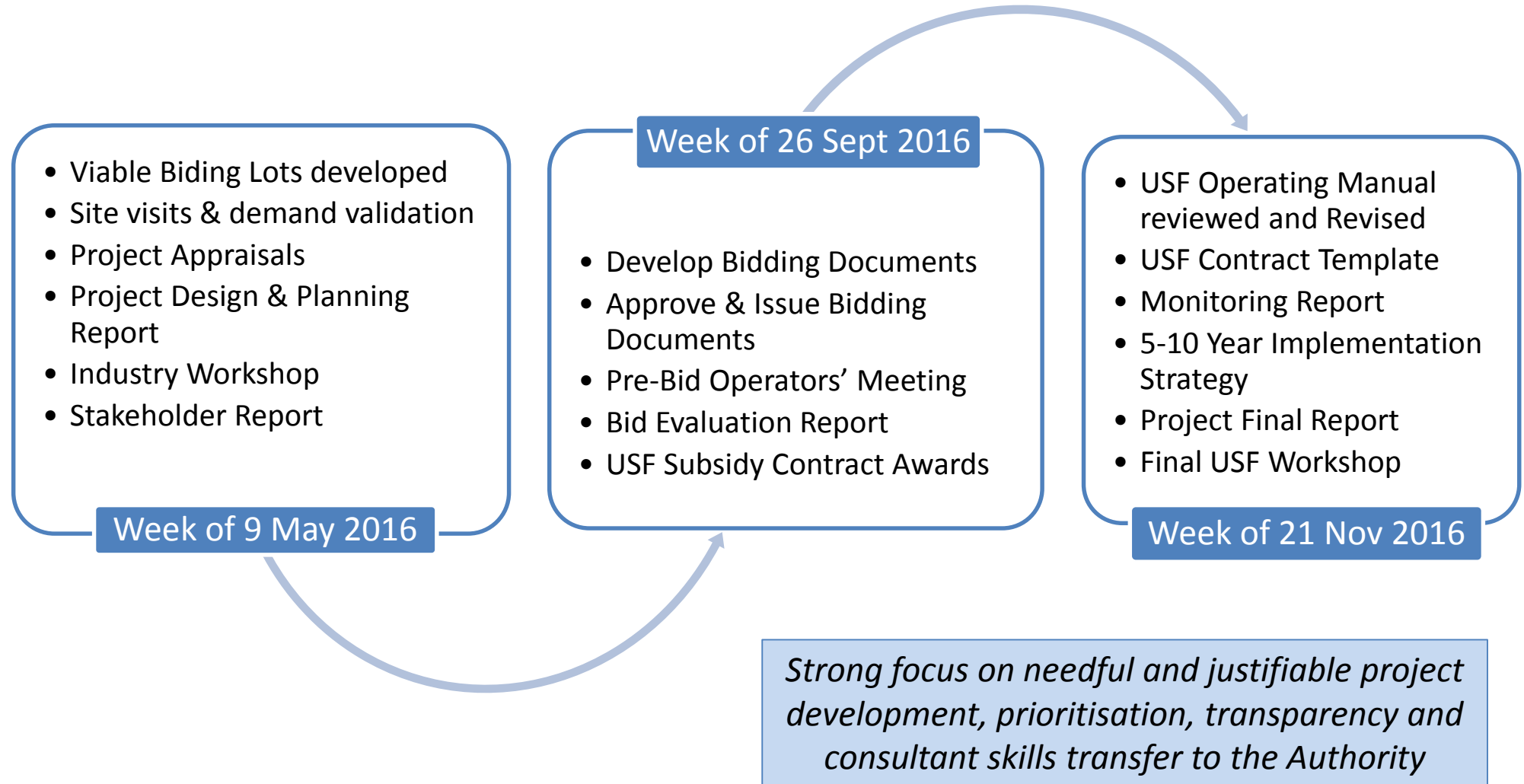
# Another leading example of diverse programs:

## Pakistan

- Four USF streams financed competitively
  - Rural Telecoms
  - Broadband  
(including private service, schools and public access)
  - Optical fibre routes to small districts
  - Special projects  
(e.g., telemedicine, accessibility)
- 38 contracts signed
- High level of subsidy distribution

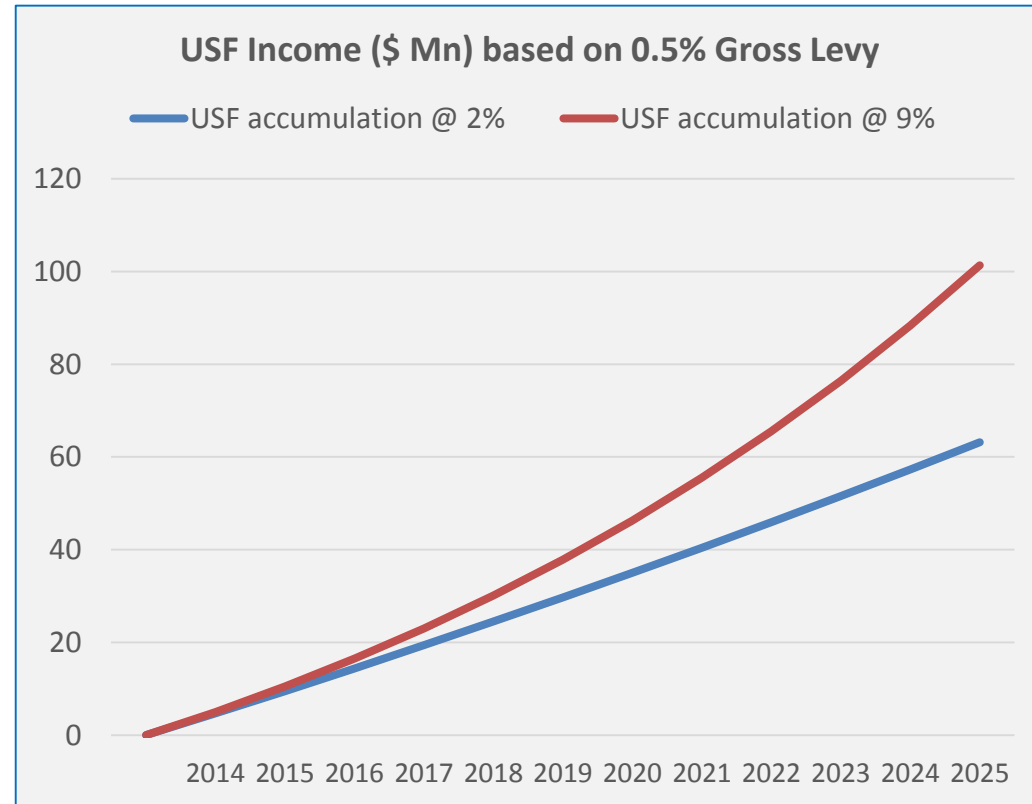


# Phase 2 Schedule – High Level



# Developing the Long term USF Strategy

- Current USF balance at KES 2.9 Bn (US\$ 29 Mn)
- **Plus .....** USF levies will total US\$ 68-100 over the next 10 years
  - Base market revenue in 2014 was KES 76 Billion (US\$ 0.9 Billion)
  - Market growth assumed between 2% and 9% per annum
  - Resulting resources will be at least US\$ 97
- The USF program will prioritise and phase projects to balance income with expenditures



# Prioritizing & balancing Gap Area projects

## Key considerations for program balance:

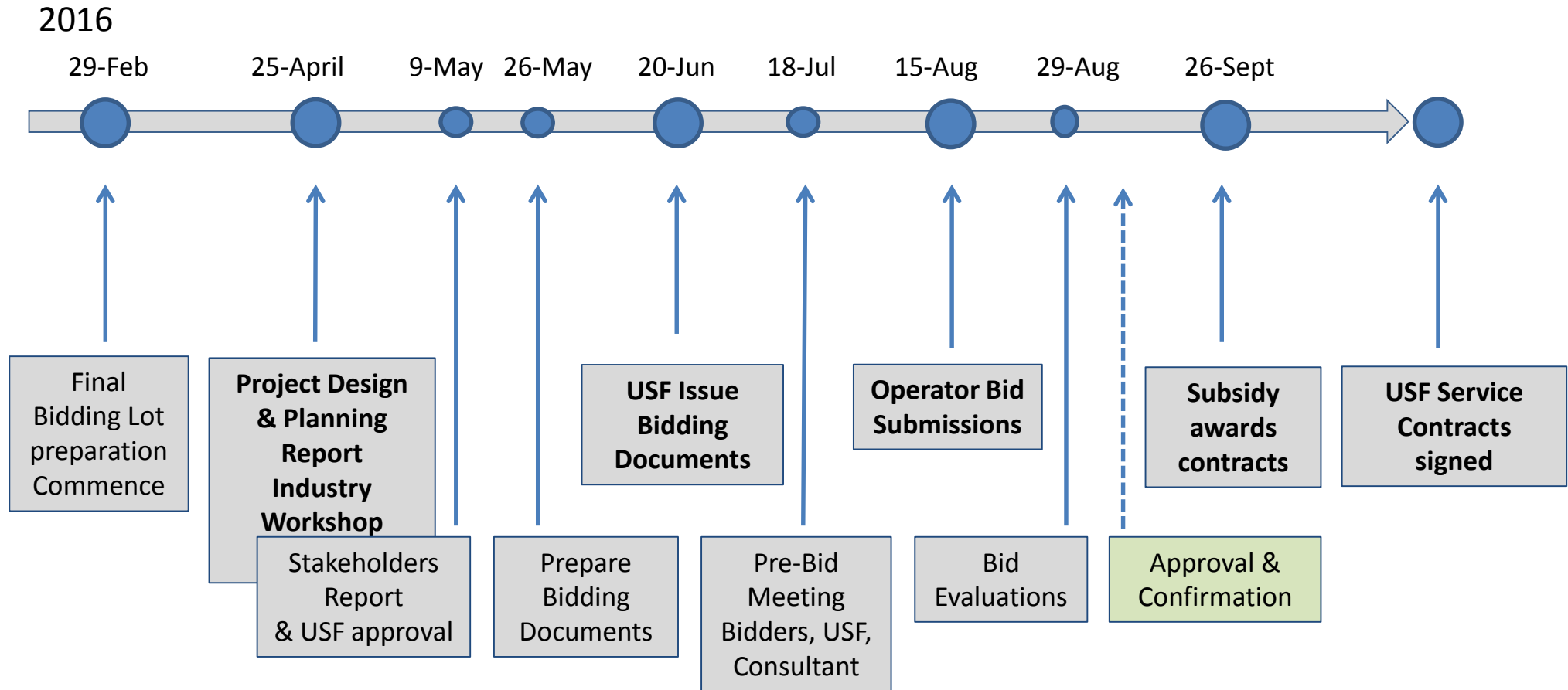
- Choose areas where subsidy most likely to result in sustainable service
  - Don't start with most difficult "basket cases" – at least mix good with poorer areas
- Identify strong Sectoral Needs where they show *national* gaps
  - Schools probably the most obvious
- Package (Lot) size
  - Offer *multiple* and *manageable* lots with potential for several bidders to make strategic selections - possibly at the ward level
- Regional representation
  - Important for public & political support
- Maximize impact, e.g., higher number of people, lower subsidy per person
  - Rural network expansion projects could range from \$5 to \$50+ per person

# Conclusion – Targeted Outputs

- 5-10 Year Perspective
- Set of projects which address the access gaps nationally in a strategic, progressive but sustainable fashion
- Model Competitive Project(s) implemented within the one year
- Set of USF subsidy awards benefitting consumers and user groups to be implemented by *several industry players*
- Template for follow-on projects
- Roadmap (Implementation Strategy) for at least 5 years
- Updated Operating Manual acceptable to USF and the industry



# First Project Life-Cycle from Design to USF Contract awards – 7 Months



# Q & A

## Discussion

# *Asante Sana*

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